

Table of Maximum and Minimum Temperatures for March, 1882.

State or Territory.	Signal Service.			U. S. Army Post Surgeons or Voluntary Observers.		
	Station.	Max.	Min.	Station.	Max.	Min.
Alabama.....	Mobile.....	59	0	Opelika.....	92	0
Do.....	Montgomery.....	43		Uniontown.....	33	
Arizona.....	Phoenix.....	105		Texas Hill.....	105	
Do.....	Prescott.....	21		Maricopa.....	107	
Arkansas.....	Little Rock.....	85	43	Madison.....	94	15
California.....	Visalia.....	91		Indio and Mammoth Tank.....	104	
Do.....	Campo.....	10		Fort Lyon.....	86	
Colorado.....	West Las Animas.....	83	18	Fort Garland.....	3	
Do.....	Pike's Peak.....	36	-5	Southington.....	69	32
Connecticut.....	New Haven.....	72	21	Fort Hall and Sully.....	88	
Dakota.....	Fort Bennett and Yankton.....	86		Fort Pembina.....	-6	
Do.....	Fort Meade.....	8				
Delaware.....	Del. Breakwater.....			Live Oak.....	90	80
District of Columbia.....	Washington.....	54	27	Waldo.....	90	
Florida.....	K. y West.....	88		Way Cross.....	91	
Do.....	Pensacola.....	62		Calhoun.....	38	
Georgia.....	Augusta and Savannah.....	87				
Do.....	Atlanta.....	43		Anna and Charleston.....	86	
Idaho.....	Et. Lapwai.....	50		Riley.....	18	
Do.....	Coeur d'Alene.....	20		Yevay.....	23	
Illinois.....	Springfield.....	53		Spiceland.....		
Do.....	Chicago.....	25		Cedar Rapids.....	91	
Indiana.....	Indianapolis.....	80	24	Clinton and Cresco.....	20	
Do.....	Fort Gibson.....	85	34	Clay Centre.....	94	
Indian Territory.....	Des Moines.....	83		Bowling Green.....	84	81
Iowa.....	Dubuque.....	25		Alexandria.....	94	
Do.....				Amrit City.....	42	
Kansas.....	Dodge City.....	87	26	Dexter.....	62	2
Kentucky.....	Louisville.....	85	31	Emmitsburg.....	86	24
Louisiana.....	Shreveport.....	83	47	Fallston, Owings Mills, Sandy Springs and Woodstock.....	77	24
Do.....	Portland.....	62		Somerset.....	14	
Maine.....	Eastport.....	29		Heath.....	79	
Maryland.....	Baltimore.....	82		Niles.....	11	
Do.....				Fort Brady.....		
Massachusetts.....	Springfield.....	71				
Do.....	Boston.....	19		Hermanto.....	92	37
Michigan.....	Detroit and Grand Haven.....	71		Bateville, Grenada and Lake.....	90	37
Do.....	Alpena.....	12		Protem.....	21	
Minnesota.....	St. Paul.....	82	-8	Curryville.....	10	
Do.....	St. Vincent.....	47		Fort Ellis and Black's Agency.....	90	
Mississippi.....	Vicksburg.....	86		Fremont.....	89	2
Do.....				Boca.....	64	11
Missouri.....	Springfield.....	83		Contoocookville.....	51	21
Do.....	Saint Louis.....	29		Somerville.....	5	
Montana.....	Fort Keogh.....	84		Fort Stanton.....	75	
Do.....	Fort Shaw and Deer Lodge.....	14		Plattsburg Bar-rucks.....	11	20
Nebraska.....	Omaha.....	81	23	Salisbury.....	86	
Do.....	North Platte.....	75	18	Lumberton.....	86	
Nevada.....	Winnemucca.....	18		Portsmouth.....	90	
Do.....	Pioche.....	18		New Athens and Ruggles.....	20	
New Hampshire.....	Mt. Washington.....	36	-13	Fort Klunath.....	7	
Do.....				Dyberry.....	14	
New Jersey.....	Barnegat and Little Egg Harbor.....	74				
Do.....	Atlantic City.....	24		St. Matthews.....	90	26
New Mexico.....	La Mesilla.....	65		Austin.....	50	
Do.....	Santa Fe.....	18				
New York.....	Rochester.....	73	19	Promontory.....	85	26
Do.....	Buffalo.....	19		Fort Douglas.....	64	
Do.....				Stafford.....	2	
North Carolina.....	Charlotte.....	83	36	Lynchburg.....	83	
Do.....	Cincinnati.....	82		Accotink.....	80	23
Ohio.....	Cleveland and Toledo.....	23		Variety Mills.....	80	
Do.....				Fort Canby.....	80	
Oregon.....	Roseburg.....	80		Helvetia.....	80	20
Do.....	Umatilla.....	30		Beloit.....	79	
Pennsylvania.....	Pittsburg.....	83		Ashland.....	10	
Do.....	Erie.....	21		Fort Fred Steele.....	75	6
Rhode Island.....	Narragansett Pier.....	66	23			
South Carolina.....	Charleston.....	86	46			
Tennessee.....	Memphis.....	88				
Do.....	Knoxville.....	36				
Texas.....	Rio Grande City.....	107				
Do.....	Grison Springs.....	20				
Utah.....	Salt Lake City.....	73	26			
Do.....						
Vermont.....	Burlington.....	59	15			
Do.....						
Virginia.....	Lynchburg.....	85	30			
Do.....	Chincoteague.....	30				
Washington Ter.....	Olympia.....	79	30			
Do.....	Pomeroy.....	27				
West Virginia.....	Morgantown.....	77	23			
Wisconsin.....	Madison.....	76				
Do.....	La Crosse.....	21				
Wyoming.....	Cheyenne.....	74	15			
Do.....	Fort Washakie.....	74				

peach buds are open; ice formed to a thickness of three-quarters of an inch; no serious damage is feared. Felton, Delaware, eleventh, no serious damage has been done to peach crop by cold weather. Bridgeville and Salisbury, Delaware, report that the peach crop prospects have not been injured. Georgetown, Delaware, eleventh, it is feared that serious injury to peach crop will result from cold weather. Fredericksburgh, Virginia, eleventh, the sudden change in temperature has endangered the peach crop in northern Virginia. Wheeling, West Virginia, eleventh, dispatches from various points in this state, Ohio and Pennsylvania show that the recent cold weather has damaged early apples, peaches and small fruits; wheat has also been injured. Columbus, Ohio, eleventh, the secretary of the state board of agriculture thinks that the fruit crop has been badly damaged, if not entirely destroyed. Farmers report the wheat crop to have suffered serious injury. Kalamazoo and South Haven, Michigan, eleventh, dispatches report prospects in the fruit-belt as flattering, aside from the damage done small fruits from the recent cold weather. Memphis, twenty-first, reports from Haywood, Tip-ton and Lauderdale counties, Tennessee and Mississippi, and Crittenden counties, Arkansas, state that the frosts of the fourteenth, fifteenth, and sixteenth killed all cotton in those counties, necessitating replanting, which will put back farming operations about two weeks.

## PRECIPITATION.

The distribution of rain-fall over the United States and Canada, as determined from observations taken at over six hundred stations, is exhibited on chart number iii. The table on the left hand corner of this chart shows the average monthly rainfall, determined from the records of Signal Service stations in the several districts, and the excess or deficiency as compared with the average for many years.

There has been a deficiency of rain-fall in New England, except on the summit of Mount Washington where the rain-fall amounted to 11.2 inches, or 7.72 inches more than the average.

In the middle and south Atlantic states, the Ohio valley and the lower lake region, the deficiency amounted to less than one inch. In Tennessee and the western Gulf States, the deficiency ranged from 1.73 to 2.05 inches. On the north Pacific coast, an excess of 2.09 inches is reported, while in the middle and south Pacific coast regions, the rain-fall was about one-half inch below the average.

At the station on the summit of Pike's Peak, 4.79 inches of rain are reported; the average for the month of April being 4.13 inches.

## DEVIATIONS FROM AVERAGE PRECIPITATION.

Under this heading, departures exhibited by the reports from the regular Signal Service stations, are shown in the table of comparative monthly rain-falls, (as published in the lower left hand corner of chart iii.) The following items of importance in connection with this subject, are reported by voluntary observers:

*Connecticut:* Southington, monthly rain-fall 0.85 inches, which is much below the average of the past twelve years. During that period, the largest monthly precipitation for April, 5.41 inches occurred in 1870; the smallest, 1.15 inches [with the exception of April, 1882,] occurred in 1881.

*Illinois:* Riley, monthly rain-fall 3.29 inches, or 0.60 inches above the average of the past twenty-one years. Only the monthly rain-falls of April, 1861, '68 and '72 exceeded that of the current year.

*Kansas:* Wellington, monthly rain-fall 3.10 inches or 1.04 inches above the average of the past three years. Lawrence, monthly rain-fall 3.20 inches or 0.17 inches above the April average for the past fourteen years. During that period the largest monthly rain-fall for April, 5.48 inches, occurred in 1878; the smallest, 1.08 and 1.27 inches, occurred in 1870 and '81 respectively. The total amount of precipitation for the four months ending April 30th, 1882, is 7.18 inches, which is

the temperature fell to 29° no serious damage has resulted. Smyrna, Delaware, eleventh, about twenty per cent. of the

0.62 inches more than the average for the same period in the fourteen preceding years.

*Maine:* Gardiner, monthly precipitation 2.65 inches or 0.71 inch below the average of the past forty-six years.

*Maryland:* Fallston, monthly rainfall 2.82 inches, or 0.45 inch below the average for the past eleven years. During that period, the largest April rainfall 8.11 inches, occurred in 1874; the smallest 1.76 inches, occurred in 1876.

*Nebraska:* Sutton, monthly rainfall 10.95 inches, which has been exceeded but once in thirty years in this section, viz: at Plattsmouth in 1873, when the April precipitation was 15.90 inches.

*New Hampshire:* Contoocookville, monthly precipitation, 1.00 inch, is less than one-third of the April average for the past eleven years.

*New York:* North Volney, monthly rainfall 1.80 inches, or 0.42 inch below the average of past nine years. During that period the largest monthly precipitation 3.65 inches fell in 1874; the least, 0.65 inch fell in 1879. Palermo, monthly rainfall 1.67 inches, or 0.70 inch below the average of the past twenty-two years. During that period the largest monthly rainfall, 6.20 inches fell in 1863; the least, 0.20 inch fell in 1879.

*Virginia:* Wytheville, monthly rainfall, 2.81 inches, or about 0.89 inch below the April average of eighteen years. During that period the largest April rainfall, 6.50 inches, fell in 1862; the least, 0.80 inch fell in 1876.

*West Virginia:* Helvetia, monthly rainfall, 4.26 inches, or 0.71 inch above the average of the past six years.

*Missouri:* St. Louis, Missouri Weather Service reports, rainfall, 4.30 inches, or about the average of the past forty-five years.

#### SPECIAL HEAVY RAINS.

Fourth, Key West, Fla., 3.23 inches. Little Rock, Arkansas, 1.50 in thirty minutes; Prescott, Arkansas, 7.20. Seventh, Proteem, Missouri, 1.64 in three hours; Amite City, Louisiana, 3.32. Seventh and eighth, Corinth, Tennessee, 4.50. Eighth, Brownsville, Tennessee, 6.04; Milan, Tennessee, 5.00; Paris, Tennessee, 3.14. Eleventh, Alexandria, Louisiana, 4.00. Twelfth, Griffin, Georgia, 5.01; Dallas, Texas, 3.31; Monticello, Arkansas, 3.02; Prescott, Arkansas, 7.35. Eighteenth, Vicksburg, 2.43 in six hours; Natchitoches, Louisiana, 2.55. Eighteenth and nineteenth, Mobile, 7.30, of which 6.70 fell in eight hours. Nineteenth, Amite City, Louisiana, 2.80; Meridian, Mississippi, 2.50. Nineteenth and twentieth, Saint Augustine, Florida, 3.81 in ten hours; Waldo, Florida, 6.86. Twenty-first, Booneville, Missouri, 2.95. Twenty-second, Chattanooga, 2.99; Dalton, Georgia, 2.75; Tuscaloosa, Alabama, 2.70; Arkansas City, Arkansas, 4.03; Monticello, Arkansas, 3.00; Aberdeen, Mississippi, 6.50; Columbus, Mississippi, 2.93; Macon, Mississippi, 2.65; Meridian, Mississippi, 3.20. Twenty-third, Savannah, Georgia, 1.19 in forty-five minutes; West Point, Georgia, 2.69; Eastman, Tennessee, 3.05; Columbia, Georgia, 2.85. Twenty-seventh, Fort Barrancas, Florida, 3.05 in three hours and forty minutes. Twenty-eighth, Helena, Arkansas, 2.63; Oxford, Kansas, 3.25; Prescott, Arkansas, 3.75. At Walnut Ridge, Arkansas, 6.79 inches fell on the sixth, seventh and eighth.

#### LARGEST MONTHLY RAINFALLS, INCLUDING MELTED SNOW.

Prescott, Arkansas, 22.18 inches; Alexandria, Louisiana, 12.13; Amite City, Louisiana, 11.71; Aberdeen, Mississippi, 11.24; Mount Washington, 11.20; Sutton, Nebraska, 10.95; Macon, Mississippi, 10.25; Waldo, Florida, 10.22; Mobile, Alabama, 9.92; Brownsville, Tennessee, 9.41; Tuscaloosa, Alabama, 9.41; Meridian, Mississippi, 9.20; Walnut Ridge, Arkansas, 9.03; Corinth, Tennessee, 9.02; Cheneyville, Louisiana, 8.89; Columbus, Mississippi, 8.52; Okolona, Mississippi, 8.41; State Line, Alabama, 8.31; Natchitoches, Louisiana, 8.20; Green Springs, Alabama, 8.18; Lake, Mississippi, 8.16; Demopolis, Alabama, 8.16; Jackson, Mississippi, 8.14; Griffin,

Georgia, 7.84; Clinton, Iowa, 7.40; Calhoun, Georgia, 7.38; Saint Augustine, Florida, 7.27; Monticello, Arkansas, 7.29; Stockham, Nebraska, 7.20; Cedar Bend, Nebraska, 7.19; Fort Barrancas, Florida, 7.08; Grenada, Mississippi, 7.08; Monroe, Louisiana, 7.08; Arkansas City, Arkansas, 7.08; Milford, Nebraska, 6.88; Brook Haven, Mississippi, 6.90; Inavale, Nebraska, 6.80; Fort Canby, Washington Territory, 6.80; Chicago, 6.72; Proteem, Missouri, 6.61; West Point, Georgia, 6.54; Fayette, Mississippi, 6.50; Pawnee City, Nebraska, 6.50; Edwards, Mississippi, 6.33; Troy, Alabama, 6.18; Crete, Nebraska, 6.17; New Corydon, Ind., 6.01.

#### SMALLEST MONTHLY RAINFALL, INCLUDING MELTED SNOW.

Mammoth Tank, Mojave and Indio, California; Texas Hill, Casa Grande, Benson, Wilcox, Yuma, Phoenix' San Carlos and Pantano, Arizona; El Paso, Texas; Lordsburg, New Mexico, and Terrace, Utah, none; Florence, Arizona, trace; La Mesilla, New Mexico and Waco, Texas, 0.01; Camp Thomas, Arizona, 0.02; Fort Verde and San Simon, Arizona, 0.03; Kilton, Utah, and Tucson, Arizona, 0.05; Fort Grant, Arizona, 0.07; Silver City, New Mexico, 0.08; Concho, Texas, 0.09; Stockton, Texas, 0.12; Russellville, Arkansas, 0.14; Fort McDermott, Nevada, 0.14; Concho, Texas, 0.17; Weimar, Texas, 0.20; Coleman City, Texas, and Talladega, Alabama, 0.24; Antioch, California, Palisade and Browns, Nevada, 0.25; Solidad, California, and Sante Fe, New Mexico, 0.26; Prescott, Arizona, 0.28; Carlin, Nevada, 0.30; Promontory, Utah, 0.32; Uvalde, Texas, 0.33; Chualar, California, 0.34; Colusa, California, 0.35; Gainsville, Georgia, and Reno, Nevada, 0.38; Golconda, Nevada, and Fort Wingate, New Mexico, 0.40; Texarkana, Arkansas, 0.42; Corsicana, Texas, 0.44; Cheyenne, Wyoming, 0.46; Anaheim, California, 0.48; Brentwood, California, 0.49; Ticoma, Nevada, Ravenna, California, and Pembina, Dakota, 0.50.

#### RAINY DAYS.

The number varied in New England from ten to twenty-one; middle Atlantic states, ten to seventeen; south Atlantic states, eight to nineteen; Florida peninsula, eight to thirteen; east Gulf states, eleven to twelve; west Gulf states, six to fourteen; Rio Grande valley, one to five; Ohio valley and Tennessee, ten to sixteen; lower lake region, ten to sixteen; upper lake region, eight to eighteen; extreme northwest, eight to thirteen; upper Mississippi valley, nine to fourteen; Missouri valley, ten to sixteen; northern slope, eight to fifteen; middle slope, six to fifteen; southern slope, zero to eight; southern plateau, zero to seven; middle plateau, ten to fourteen; northern plateau, seven to sixteen; north Pacific coast region, eighteen to twenty-one middle Pacific coast region, eight to nine; South Pacific coast region, zero to eight.

#### CLOUDY DAYS.

The number varied in New England from five to fourteen; middle Atlantic states, eight to fourteen; south Atlantic states, six to twelve; Florida peninsula, four to six; east Gulf states, six to eleven; west Gulf states, five to fifteen; Rio Grande valley, six to thirteen; Ohio valley and Tennessee, seven to twelve; lower lake region, nine to fourteen; upper lake region, five to twelve; extreme northwest, five to twelve; upper Mississippi valley, six to thirteen; Missouri valley, nine to sixteen; northern slope, six to thirteen; middle slope, two to eight; southern slope, zero to seven; southern plateau, zero to four; middle plateau, four to twelve; northern plateau, six to ten; north Pacific coast region, fourteen to sixteen; middle Pacific coast region, three to eight; south Pacific coast region, one to six.

#### SNOW.

The dates on which snow fell in the various districts, are as follows:

*New England*, 1st to 4th, 6th to 15th, 18th to 25th, 27th to 29th.

*Middle Atlantic states*, 9th to 12th, 21st to 24th.  
*Ohio valley*, 10th, 11th, 15th, 19th, 22d, 26th.  
*Lower lake region*, 1st, 10th to 12th, 14th to 16th, 21st.  
*Upper lake region*, 2d, 9th to 14th, 19th to 21th, 23d, 26th to 30th.

*Upper Mississippi valley*, 1st, 3d, 8th to 12th, 18th, 19th.  
*Missouri valley*, 11th to 13th, 22d.  
*Extreme northwest*, 5th, 6th 9th, 13th, 22d.  
*Northern slope*, 4th to 29th.  
*Middle slope*, 3d, 4th, 7th, 8th, 10th to 14th, 16th, 17th, 21st, 27th to 30th.

*Southern plateau*, 5th, 7th, 10th, 12th to 14th, 17th, 20th to 22d.

*Middle plateau*, 3d to 6th, 9th to 11th, 15th to 17th, 20th, 22d to 23d.

*Northern plateau*, 10th, 16th, 19th, 20th, 22d to 24th, 26th, 27th.

*North Pacific coast region*, 6th, 20th, 23d.  
 Lynchburg, Virginia, 23d. The Blue Ridge mountains, twenty miles distant are partly covered with snow. Burlington, Vermont, 29th. The summits of the Adirondacks, (notably Mount Marcy) and of Green mountains are covered with snow. In a sheltered place, twenty feet from Signal office, snow remains to a depth of four feet.

#### LARGEST MONTHLY SNOW FALL.

Mount Washington, 66 inches; Cisco, California, 56; Summit, California, 32.5; Emigrant Gap, California, 26; Turkee, Nevada, 18.5; Pike's Peak, Colorado, 18; Blackfeet Agency, Montana, 17.6; Wells, Nevada, 13; Otego, Nevada, 12; Eastport, Maine, and Boca, Nevada, 10; Stratford, Vermont, and Orono, Maine, 9; Lunenburg, Vermont, and Hermosa, California, 8.5; Bloominggrove, Pennsylvania, 8; Alta, California, Elko, Nevada, Port Jervis, New York, and Beowawa, Nevada, 6.

#### DEPTH OF SNOW ON GROUND AT END OF MONTH.

*Colorado*: Pike's Peak, eighteen inches.

*Maine*: Eastport, ten inches.

*New Hampshire*: Mount Washington, sixty-six inches.

#### HAIL.

Eastport, 2d. Manasquan, New Jersey, 2d. Lynchburg, Virginia, 27th. Delaware Breakwater, Delaware, 23d. Philadelphia, 19th. Washington, District of Columbia, 22d. Atlanta, 3d. Augusta, 9th, 22d. Mobile, 11th. Palestine, Texas, 11th, 8.04 p. m., heavy rain and hail storm continuing until 8.18 p. m.; stones measured three-eighths of an inch in diameter. Considerable damage was done to fruit and growing crops. The storm is considered by residents to have been one of the severest ever experienced at this place. The damage to buildings, crops, etc., is estimated at about \$175,000. Dennison, Texas, 22d. Fort Gibson, Indian territory, 22d. Shreveport, 21st. Palestine, Texas, 28th. Little Rock, Arkansas, 11th. Indianola, Texas, 12th, severe hail storm reported from Texona, Jackson county, destroying potatoes, melons and other vegetables. In one place a field of corn nearly waist-high was completely destroyed for a mile square. On 14th, hail was reported to have fallen twenty miles north of station, and on the 16th hail fell at this station. Port Eads, Louisiana, 13th. Fort Concho, Texas, 7th, 8.55 p. m., hail measuring half inch in diameter. Nashville, 12th. Cincinnati, 10th, 26th. On the latter date between 4.48 and 4.53 p. m., hail fell rapidly; stones measured half inch in diameter; in some instances breaking window glass. Memphis, 11th. Cleveland, 19th. Rochester, 2d, 28th. Chicago, 6th. Madison, Wisconsin, 1st. Cairo, 22d. Saint Louis, 22d. Springfield, Illinois, 6th. Omaha, 7th. Leavenworth, 11th, 18th, 21st. Huron, Dakota, 8th. Springfield, Missouri, 22d. Fort Bennett, Dakota, 25th. Deer Lodge, Montana, 15th, 19th, 20th. Rapid City, Dakota, 4th, 7th. North Platte, 7th, severe storm, accompanied by hail, which at first was small, but soon large egg-shaped and spherical stones fell, their av-

erage diameter being about one and one-fourth inches. Dodge City, Kansas, 5th. Grierson Springs, Texas, 7th, 4.30 p. m., severe hail storm, accompanied by thunder and lightning; stones weighing from one to two ounces. Henrietta, Texas, 21st, severe hail storm reported from section about thirty miles east of station. Silver City, New Mexico, 13th. Helena, Montana, 19th. Fort Missoula, Montana, 20th. Umatilla, Oregon, 19th. Spokane Falls, Washington territory, 26th. Colfax, Washington territory, 15th. Boise City, Idaho, 22d. Fort Lapwai, Idaho, 19th, 25th. Dayton, Washington territory, 23d, 25th. Red Bluff, California, 10th. Olympia, Washington territory, 20th, 25th. Fort Hale, Dakota, 7th, 8th. Fort McDermitt, Nevada, 6th, 9th, 10th. Fort Niagara, New York, 28th. Fort Concho, Texas, 7th. Camp near Presidio, Texas, 1st. Fort Douglas, Utah, 23d. Fort Canby, Washington territory 20th, 23d to 26th. Olivet, Dakota, 29th. Alexandria, Dakota, 7th, 21st. Charleston, Illinois, 26th. Spiceland, Indiana, 26th. Vevay, Indiana, 10th. Rising Sun and Lafayette, Indiana, 10th. Cresco, Iowa, 3d, 9th, 21st. Nora Springs and Cedar Rapids, Iowa, 25th. Dana, Iowa, 8th. Holton, Kansas, 3d. Independence, Kansas, 11th, 21st. Yates Centre, Kansas, 8th, 18th, 21st. Clay Centre, Kansas, 11th, Creswell, Kansas, 17th. Cornish and Gardiner, Maine, 7th. Fallston, Maryland, 19th. Owing's Mills, Maryland, 20th. Federalsburg, Maryland, 23d. Woodstock, Maryland, 10th. Westborough, Massachusetts, 7th. Litchfield, Michigan, 26th, 27th. Fayette, Mississippi, 10th, 11th, on latter date, hail-stones were very large, injuring gardens and cotton-crop in some localities. Northfield, Minnesota, 3rd, 18th, 26th. Protom, Missouri, 8th 11th, 22nd. Blackfeet Agency, Montana, 24th. De Sota, Nebraska, 21st. Genoa, Nebraska, 7th. Acto and Moorestown, New Jersey, 19th. Freehold, New Jersey, 26th. Ithaca, New York, 6th. Waterburg, New York, 7th, 27th. White Plains, New York, 22d. Portsmouth and College Hill, Ohio, 26th. New Athens, Ohio, 22d. Fallsington, Pennsylvania, 2d, 19th. West Chester and Meadville, Pennsylvania, 19th. Dallas, Texas, 11th, 5:10 p. m., severest hail-storm, with largest hail ever known at this place. Stateburg, South Carolina, 22d. Clarksville, Texas, 28th. Woodstock, Vermont, 2d. Wytheville, Virginia, 4th, 26th. Manitowoc, Wisconsin, 1st. Beloit, Wisconsin, 25th. Embarras, Wisconsin, 29th.

#### SLEET.

Sleet was reported by the following stations: Bangor, Maine, 13th; Mount Washington, New Hampshire, 4th, 7th, 8th; Boston, 27th, 28th; Washington, 10th, 13th, 23d; Erie, Pennsylvania, 9th; Knoxville, Tennessee, 12th; Nashville, Tennessee, 13th; Vevay, Indiana, 10th, 25th; Spiceland, Indiana, 10th; New Athens, Ohio, 22d; Chicago, 23d; Milwaukee, 10th; Dubuque, Iowa, 10th, 22d, 23d; Saint Paul, 22d; Fort Snelling, Minnesota, 8th; Leavenworth, Kansas, 11th, 12th; Holton, Kansas, 11th; Omaha, Nebraska, 7th; North Platte, Nebraska, 11th; Fort Bennett, Dakota, 7th; Huron, Dakota, 22d; Tobacco Garden, Dakota, 7th, 8th, 9th; Cheyenne, Wyoming Territory, 4th; Pike's Peak, 27th, 28th, 30th; Fort Garland, Colorado, 21st; Fort Stanton, New Mexico, 16th; Florence, Arizona, 29th; Henrietta, Texas, 13th; Fort Washakie, Wyoming, 17th, 20th; Salt Lake City, 10th; Fort Benton, Montana, 10th, 16th; Dayton, Washington territory, 20th.

#### COTTON REGION REPORT.

Arrangements have been made with the co-operation of the rail-road and telegraph lines, in the southern states, to the end that daily reports of the rain-fall, maximum and minimum temperatures may be collected, and the results published throughout the commercial centers of the cotton region, from April first to October thirty-first, inclusive.

The accompanying chart exhibits the arrangements of stations and districts, and the rail-road system of the cotton regions. This system of reports was successfully begun on the first

of April and continued during the month. The following table gives the average rain-fall, mean of the maximum, and the mean of the minimum temperatures in each district:

*Meteorological Record for the Cotton Districts for the month of April, 1882.*

DISTRICTS.	Average rain-fall in inches.	Mean of the maximum.	Mean of the minimum.
New Orleans.....	5.63	81.9	59.9
Savannah.....	3.73	81.1	60.2
Charleston.....	2.66	77.5	54.5
Atlanta.....	4.49	76.3	54.9
Wilmington.....	3.86	74.2	50.0
Memphis.....	5.29	74.9	54.0
Galveston.....	1.68	82.1	57.9
Vicksburg.....	7.03	78.6	56.8
Montgomery.....	4.92	78.5	57.2
Augusta.....	3.05	78.2	64.7
Little Rock.....	4.74	75.9	51.9
Mobile.....	8.80	79.1	57.3

This being the first REVIEW in which reference is made to this important feature of Signal Service reports, the following list of stations is given, showing the extent of each district in the cotton region from which the full signification of the means and averages of the above table may be determined. It will be seen that the districts embrace the territory adjacent to the more important cities where Signal Service stations are located:

*Cotton Region Districts.*

Districts and Centers.	STATIONS.	
	Where.	On what Railroad.
Savannah.	Cedar Keys, Fla.	Atlantic, Gulf and West India Transit. These reports are concentrated at Cedar Keys and telegraphed to Savannah, Ga.
	Fernandina, Fla.	
	Waldo, Fla.	
	Jesup, Ga.	Savannah, Florida & Western.
	Way Cross, Ga.	
	Live Oak, Fla.	
	Quitman, Ga.	
	Thomasville, Ga.	
	Bainbridge, Ga.	South Western.
	Albany, Ga.	
	Smithville, Ga.	
Charleston.	Fort Gaines, Ga.	Central of Georgia.
	Millen, Ga.	
	Allapaha, Ga.	
	Eastman, Ga.	
	Macon, Ga.	
	Jacksonborough, S. C.	Charleston and Savannah.
	Yemassee, S. C.	
	Hardeeville, S. C.	
	Georges, S. C.	
	Branchville, S. C.	
Wilmington.	Saint Mathew's S. C.	South Carolina.
	Kingstree, S. C.	
	Weldon, N. C.	
	Goldsborough, N. C.	
	Lumberton, N. C.	
	Wadesborough, N. C.	North-Eastern.
	Charlotte, N. C.	
	Salisbury, N. C.	
	Cheraw, S. C.	
	Florence, S. C.	
Augusta.	Chester, S. C.	Wilmington and Weldon.
	Columbia, S. C.	
	Allendale, S. C.	
	Macon, Ga.	
	Columbus, Ga.	
	Athens, Ga.	Carolina Central.
	Covington, Ga.	
	Madison, Ga.	
	Union Point, Ga.	
	Newman, Ga.	
Atlanta.	West Point, Ga.	Richmond and Danville Line.
	Gainesville, Ga.	
	Tocoo, Ga.	
	Spartanburgh, S. C.	

*Cotton Region Districts.—Continued.*

Districts and Centers.	STATIONS.	
	Where.	On what railroad.
Atlanta.	Cartersville, Ga.	Western and Atlantic.
	Calhoun, Ga.	
Montgomery.	Dalton, Ga.	Central of Georgia.
	Griffin, Ga.	
	Opelika, Ala.	Western of Alabama.
	Troy, Ala.	
	Greenville, Ala.	Mobile and Girard.
	Pine Apple, Ala.	
	Uniontown, Ala.	Mobile and Montgomery.
	Demopolis, Ala.	
	Tuscaloosa, Ala.	Alabama Central.
	Selma, Ala.	
Mobile.	Birmingham, Ala.	Alabama Great Southern.
	Calera, Ala.	
	Talladega, Ala.	Louisville and Nashville.
	State Line, Ala.	
	Waynesborough, Miss.	Selma Division, East Tennessee Virginia and Georgia.
	Meridian, Miss.	
	Macon, Miss.	Mobile and Ohio.
	Columbus, Miss.	
	Aberdeen, Miss.	
	Okolona, Miss.	
New Orleans.	Scranton, Miss.	Louisville and Nashville.
	Pass Christian, Miss.	
	Brookhaven, Miss.	Chicago, Saint Louis and New Orleans.
	Amité City, La.	
	Terre Bonne, La.	Morgan's Louisiana and Texas.
	Morgan City, La.	
	Franklin, La.	
	New Iberia, La.	
	Vermillionville, La.	Merchants' Union Telegraph line, connecting with Western Union lines at Minden.
	Whiteville, La.	
Galveston.	Cheneyville, La.	Texas and New Orleans.
	Alexandria, La.	
	Natchitoches, La.	Houston and Texas Central.
	Coushatta, La.	
	Minden, La.	
	Orange, Texas	
	Beaumont, Texas.	International and Great Northern.
	Houston, Texas.	
	Hempstead, Texas.	Gulf, Colorado, and Santa Fé
	Hearne, Texas.	
Little Rock.	Corsicana, Texas.	Galveston, Harrisburgh, and San Antonio.
	Waco, Texas.	
	Dallas, Texas.	Texas and Pacific.
	Huntsville, Texas.	
	Palestine, Texas.	Texas and Pacific.
	Longview, Texas.	
	Tyler, Texas.	Saint Louis, Iron Mountain and Southern.
	Austin, Texas.	
	Belton, Texas.	Memphis and Little Rock.
	Weimar, Texas.	
Vicksburg.	Luling, Texas.	Little Rock and Fort Smith.
	San Antonio, Texas.	
	Weatherford, Texas.	Little Rock, Mississippi River, and Texas.
	Paris, Texas.	
	Texarkana, Ark.	Vicksburg and Meridian.
	Prescott, Ark.	
	Malvern Junction, Ark.	[Pacific.
	Kensett, Ark.	
	Walnut Ridge, Ark.	Vicksburg, Shreveport and
	Brinkley, Ark.	

*Cotton Region Districts.—Continued.*

Districts and Centers.	STATIONS.	
	Where.	On what railroad.
Memphis.	Grand Junction, Tenn.	Memphis and Charleston.
	Corinth, Tenn.	
	Tuscumbia, Ala.	
	Decatur, Ala.	
	Scottsborough, Ala.	
	Withe, Tenn.	Louisville and Nashville.
	Brownsville, Tenn.	
	Milan, Tenn.	
	Paris, Tenn.	
	Erin, Tenn.	
	Clarksville, Tenn.	Nashville, Chattanooga and Saint Louis.
	Nashville, Tenn.	
	Hernando, Miss.	Mississippi and Tennessee.
	Batesville, Miss.	
	Grenada, Miss.	

## RELATIVE HUMIDITY.

The mean relative humidity for the month ranges as follows in the several districts:

New England, from 57 to 76; middle Atlantic states, 53 to 75; south Atlantic states, 66 to 81; Florida peninsula, 71 to 74; east Gulf states, 67 to 78; west Gulf states, 63 to 83; Rio Grande valley, 57 to 82; Ohio valley and Tennessee, 57 to 66; lower lake region, 64 to 72; upper lake region, 67 to 77; extreme northwest, 74 to 80; upper Mississippi valley, 55 to 71; Missouri valley, 62 to 70; northern slope, 61 to 66; middle slope, 44 to 60; southern slope, 33 to 66; southern plateau, 30 to 37; middle plateau, 43 to 53; northern plateau, 53 to 75; north Pacific coast region, 70 to 76; Middle Pacific coast region, 59 to 73; south Pacific coast region, 36 to 74. High stations report the following percentages not corrected for altitude: Cheyenne, Wyoming, 49.6; Pike's Peak, 83.0; Santa Fé, 36.6; Mt. Washington, 86.6.

## WINDS.

The prevailing winds during the month of April at Signal Service stations are shown on chart number ii by arrows flying with the wind:

On the New England and middle Atlantic coasts the winds are northwest to southwest. In the south Atlantic states, from southeast to southwest, except at Hatteras, Kittyhawk and Norfolk, where they are northeasterly. In the Gulf states, Indian territory, Tennessee, and Kansas, southerly winds prevail, while in the Ohio, upper Missouri and Mississippi valleys, the winds are generally from north to east. South to west winds prevail on the north Pacific coast, and west to northwest in northern California. In the plateau regions the winds are generally from south to west.

## TOTAL MOVEMENTS OF THE AIR.

The following are the largest total movements at Signal Service stations: Mount Washington, 22,005 miles; Pike's Peak, 16,938; Hatteras, North Carolina, 12,935; Portsmouth, North Carolina, 12,702; Kittyhawk, North Carolina, 11,854; New Shoreham, Rhode Island, 11,552; Indianola, Texas, 11,098; Sandusky, 11,093; Dodge City, Kansas, 11,109; Fort Elliott, Texas, 10,712; Sandy Hook, New Jersey, 10,305; Champaign, Illinois, 10,057; Bismarck, Dakota, 10,035; Huron, Dakota, 10,010; Cape Henry, Virginia, 9,757; Barnegat, New Jersey, 9,680; Milwaukee, Wisconsin, 9,646; Grand Haven, Michigan, 9,580; Galveston, Texas, 9,551; Cape May, New Jersey, 9,432; North Platte, Nebraska, 9,412; West Las Animas, Colorado, 9,344; Moorhead, Minnesota, 9,286; Macon, North Carolina, 9,204; Fort Keogh, 9,163; Rochester, 9,106; Port Eads, Louisiana, 9,040; Yankton, Dakota, 9,032; Henrietta, Texas, 9,016; Eagle Rock, Idaho, 8,702; Punta Rasa, 8,632; Madison, Wisconsin, 8,613; Concho, Texas, 8,363; Oswego, New York, 8,267; Boston, Massachusetts, 8,239; De-

troit, Michigan, 8,072; Santa Fe, New Mexico, 8,068; Chincoteague, Virginia, 8,035; Port Huron, Michigan, 8,003. The smallest are: Lynchburg, Virginia, 2,676; Lewiston, Idaho, 2,692; Augusta, Georgia, 2,739; Los Angeles, California, 2,786; Florence, Arizona, 2,947.

## HIGH WINDS.

On the summit of Mount Washington the maximum velocity, 120 miles, n.w., on 22d. Velocities of 100 miles, n.w., occurred on the 2d, 13th and 18th. Velocities of 50 miles, or over, occurred as follows: 92 miles, n.w., 17th; 90, n.w., 4th; 86, n.w., 16th; 81, n.w., 7th; 80, n.w., 8th; 75, n.w., 21st; 68, s.w., 1st; 68, n.w., 30th; 66, n.w., 23d; 60, n.w., 12th and 20th; 60, s.e., 19th; 58, n.w., 5th; 55, n.w., 29th; 52, n.w., 14th; 50, n.w., 9th.

On the summit of Pike's Peak, Colorado, the maximum velocity, 64 miles, s.w., occurred on the 25th; other high velocities occurred as follows: 60 miles, s.w., on the 20th and 24th; 58, s.w., 3d; 56, n.w., 8th; 52, s.w., 23d; 50, s.w., 19th.

Other stations reporting velocities of 50 miles per hour, or over, are as follows: Eagle Rock, Idaho, 55 miles, s.w., 19th; Fort Keogh, 50, w., 26th; Dodge City, Kansas, 52, s., 17th; Palestine, Texas, 50, w., 22d; Toledo, 50, e., 23d; Kittyhawk, North Carolina, 51, w., 10th; Hatteras, North Carolina, 56, n.e., 10th; Portsmouth, North Carolina, 66, n.e., 10th, 52, s.w., 23d.

## LOCAL STORMS.

Palestine, Texas, 22d, violent storm; wind reaching maximum velocity of fifty miles; much damage done in this city to fences, buildings, etc. Sandusky, Ohio, 23d, destructive gale, reaching its height at 2:15 a. m. The schooner "Gallatin," while off Cleveland, sprung a leak and the high wind caused her to fill rapidly. She became unmanagable and went ashore on Chickanola reef and sank. During the gale there were thirty vessels sheltered at Kelly's Island; all of them were more or less damaged. At Marblehead, seven docks were washed away. The damage by this storm, to fishing interests was very great.

Topeka, Kansas, 6th, during evening, a tornado started near Raymond in Rice county, moved in a northerly direction and prostrated the telegraph poles, when it crossed the Santa Fe railroad track. In this neighborhood several buildings were demolished, one person was killed and another fatally injured. Proceeding northward the storm struck the town of Chase, demolishing twenty out of thirty-six buildings and threw railroad cars from the track; three persons were killed and one fatally injured. At the same time another small tornado passed through the eastern part of the county, but did but little damage. In some places the wind sucked all of the water out of wells. As the storm-cloud approached Chase it was of funnel-shape, whistling and twisting with great velocity. Many of the inhabitants are more or less injured, but few escaping without hurt of some kind. The people are living in box-cars and many families are in destitute conditions.

At Strafford, Kansas, a village of about eighty houses, about two hundred miles southwest of Topeka, all but two houses were blown down; one man was killed and several persons were, more or less, injured. Reports from Keosauqua, say great damage was done throughout the lower Des Moines valley. At Keosauqua one house was demolished and several others injured; tress and fences blown down in all directions. At Ashton, Missouri, same date, a tornado did great damage; four houses were demolished and others suffered loss of chimneys and roofs.

Detroit, 6th, between Clyde and Highland, near the Flint and Pere Marquette railway, about forty miles from Detroit, about 8 p. m., a violent tornado occurred; houses were destroyed and a number of lives were lost. In Alamo township, Kalamazoo county, houses and barns were unroofed, two persons were killed and another injured. The storm struck this section between 5 and 6 p. m., and moved eastward across the northern part of the country.

At Otsego, Allegan county, Michigan, the storm was very